

REMARKS

In the Office Action, the Examiner noted that the claims 1-23 are pending in the application and that the claims 1-23 are rejected over a prior art reference. By this response, claims 1, 4, 7-10, 15 and 20-23 have been amended. Thus, claims 1-23 remain pending in the application. Applicant believes no issue of new matter should arise and entry of the amendment is respectfully requested. Applicant respectfully traverses the rejections for the reasons indicated below.

Information Disclosure Statement

The attention of the Examiner is hereby directed to the unacknowledged references listed in the Information Disclosure Statements (PTO-1449) filed on December 7, 2004 and February 8, 2005, copies of each of which references were submitted therewith. Applicants respectfully request that the Examiner initial the individual references on these sheets, indicating that the references have been considered in the application, and provide Applicants with a copy of the initialed pages with the Examiner's next communication.

Applicants' note the Examiner's request to identify any specific references which are believed to have particular significance in the prosecution of this application. The cited references were identified during various stages of prosecution of this application, including in prior art searches, and citations in related PCT, United States and foreign applications. Based, on foregoing, Applicants consider all cited references to be of significance to the prosecution and respectfully request that the Examiner make an independent determination of a reference's significance.

Rejection under 35 U.S.C. §102(b)

Claims 1-23 are rejected under 35 USC §102(a) as being anticipated by Tanaka (US 6,754,542). Applicants respectfully traverse the rejection and respectfully submit that Tanaka does not describe the presently claimed invention. Applicants discuss the rejection below as it applies to independent claims 1, 4, 7, 10, 15 and 20, and dependent claims 2-3, 5-6, 8-9, 11-14, 16-19 and 21-23.

The current invention is directed to a system, method and medium for controlling semiconductor-processing equipment that has multivariate input parameters and outputs. More specifically, embodiments of the present invention minimize the effects of outputs being interdependent from each other by providing input parameter transformations having transformation coefficients, wherein the coefficients are obtained by minimizing a score function. This is reflected in each of the claims, which recites “identifying at least one input, the at least one input causing a change in at least two of a plurality of outputs,” “storing values of the identified inputs and corresponding empirical output values along with predicted output values, wherein the *predicted output values are calculated based on ... the identified inputs*,” and “*calculating a set of transform coefficients by minimizing a score equation that is a function of, in part, differences between one or more of the empirical output values and their corresponding predicted output values.*”

Tanaka provides a “control arithmetic apparatus and method which can suppress an overshoot even if a disturbance for which the controlled variable changes at high speed is applied.” (Col. 3, lines 2-5) According to Tanaka, the control arithmetic apparatus and method first calculates “an error of a controlled variable on the basis of a controlled variable and set point for a controlled system.” (Col. 3, lines 7-10) Next, on the basis of the error output from the first calculation, Tanaka calculates “an error correction amount on the basis of a magnitude of the error output from the first calculation.” (Col. 3, lines 14-16) Tanaka then performs “convergence operation such that the error correction amount output from the error correction amount calculation [] gradually converges to 0.” (Col. 3, lines 18-20) Finally, Tanaka calculates “a manipulated variable on the basis of the error output from the first calculation [] and an error correction amount after the convergence operation.” (Col. 3, lines 21-25)

As an initial matter, Tanaka discloses a relationship between a single manipulated output variable and a single controlled input variable. There is no teaching or suggestion of “one input, the at least one input causing a change in at least two of a plurality of outputs,” as is recited in all of the claims.

While Tanaka discloses methods for performing “convergence operation such that the error correction amount output from the error correction amount calculation [] gradually converges to 0,” nothing in the art of record discloses or suggests “calculating a set of *transform*

coefficients by minimizing a score equation that is a function of, in part, differences between one or more of the empirical output values and their corresponding predicted output values,” as recited in claim 1. Instead, Tanaka “calculates the error correction amount E_{rx} corrected by multiplying the error E_r by a predetermined coefficient.” (Col. 4, lines 58-60) More specifically, the “error correction amount E_{rx} is calculated by $E_{rx} = \xi E_r$, where ξ is a constant (e.g., $\xi = 0.8$).” (Col. 4, lines 62-65) After calculating the error correction amount E_{rx} , Tanaka “performs convergence operation such that the error correction amount E_{rx} output ... gradually converges to 0,” and then “calculates the error correction amount E_{rx}' after the convergence operation according to equation (8): $E_{rx}' = \lambda E_{rx}$, where λ is a constant ($0 < \lambda < 1$; for example, $\lambda = 0.95$).” (Col. 4, line 67-Col. 5, line 9) Tanaka does not calculate “a set of *transform coefficients by minimizing a score equation*.” (Claim 1) Further, Tanaka does not disclose a “score equation that is a function of, in part, differences between one or more of the empirical output values and their corresponding predicted output values,” wherein “the predicted output values are calculated based on, in part, the values of the identified inputs.” (Claim 1) In contrast, Tanaka calculates “an error [E_r] of a controlled variable on the basis of a controlled variable and set point for a controlled system.” (Col. 3, lines 7-10)

In view of the above, Applicants respectfully submit that claims 1-23 are not anticipated by the cited reference and respectfully request that the rejection under 35 U.S.C. § 102(b) of these claims be withdrawn.

Rejection under 35 U.S.C. §101

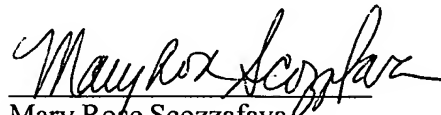
Claims 1-23 are rejected under 35 USC §101 as being directed to non-statutory subject matter. In view of the amendment to claims, as implicitly suggested by the examiner, the rejection under 35 U.S.C. §101 is obviated, and claims 1-23 fully satisfies the requirements of 35 U.S.C. §101. Withdrawal of this rejection is respectfully requested.

AUTHORIZATION

No fees are believed to be due with the response; however, the Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account no. 08-0219.

Respectfully submitted,

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